

CLAIMS

What is claimed is:

- 1 1. A pressure regulator for regulating a fluctuatable fluid pressure of a fluid, the fluid being
2 received from a first device and being transmitted to a second device, comprising:
3 A spool valve being biased in a closed non-regulating disposition, the fluid
4 pressure being throttled through an orifice to act on a spool valve working surface, the
5 throttled fluid pressure acting on the working surface acting in opposition to the bias to
6 shift the spool valve from the closed non-regulating disposition to an open regulating
7 disposition, the orifice acting to minimize fluid pressure fluctuations and to thereby
8 stabilize the fluid pressure of the fluid transmitted to the second device.
- 1 2. The pressure regulator of claim 1, a fluid flow to the orifice being tapped off of a main
2 flow of fluid, the main flow of fluid for transmission to the second device.
- 1 3. The pressure regulator of claim 2, the main flow of fluid flowing through the spool valve
2 in a direction opposite to the direction of opening translation of the spool valve.
- 1 4. The pressure regulator of claim 2, the main flow of fluid flowing through a conical flow
2 passage.
- 1 5. The pressure regulator of claim 2, the main flow of fluid flowing through a conical flow
2 passage from a greater flow passage area to a lesser flow passage area.
- 1 6. The pressure regulator of claim 4, the conical flow passage being defined in part by the
2 spool valve.
- 1 7. The pressure regulator of claim 4, the conical flow passage being defined in part by a
2 conical groove defined in the spool valve.

1 8. The pressure regulator of claim 4, the conical flow passage having a main flow inlet
2 disposed proximate a greater flow passage area and a main flow outlet disposed proximate a
3 lesser flow passage area.

1 9. The pressure regulator of claim 1, an actuating fluid passage connecting a main flow inlet
2 to the spool valve working surface, the orifice being defined in the actuating fluid passage.

1 10. The pressure regulator of claim 1, the orifice being between .010 inches in diameter and
2 .060 inches in diameter.

1 11. The pressure regulator of claim 1, the orifice being substantially .030 inches in diameter.

1 12. The pressure regulator of claim 1, a bypass fluid passage bypassing fluid to the spool
2 valve working surface when there is no fluid present to the working surface.

1 13. The pressure regulator of claim 12, the bypass fluid passage having a check valve
2 disposed therein for closing the bypass passage when there is fluid present to the working
3 surface.

1 14. A pressure regulator for regulating a fluctuatable fluid pressure of a fluid flow, the fluid
2 flow being received from a first device and being transmitted to a second device, comprising:

3 A spool valve being translatable between a closed non-regulating disposition and
4 an open regulating disposition, a throttled portion of a fluid flow acting on a first spool
5 working surface and a main portion of the fluid flow acting on a second opposed spool
6 working surface.

1 15. The pressure regulator of claim 14, the throttled portion of the fluid flow being tapped off
2 of a main portion of fluid flow, the main portion of fluid flow for transmission to the second
3 device.

1 16. The pressure regulator of claim 14, the main portion of fluid flowing through the spool
2 valve in a direction opposite to a direction of opening translation of the spool valve.

1 17. The pressure regulator of claim 14, the main portion of fluid flow flowing through a
2 conical flow passage.

1 18. The pressure regulator of claim 14, the main portion of fluid flow flowing through a
2 conical flow passage from a greater flow passage area to a lesser flow passage area.

1 19. The pressure regulator of claim 14, the second spool working surface having a conical
2 shape.

1 20. The pressure regulator of claim 14, the second spool working surface being a conical
2 groove defined in the spool valve.

1 21. The pressure regulator of claim 14, a conical flow passage having a main flow inlet
2 disposed proximate a greater flow passage area and a main flow outlet disposed proximate a
3 lesser flow passage area.

1 22. The pressure regulator of claim 14, an actuating fluid passage connecting a main flow
2 inlet to the first spool valve working surface, an orifice being defined in the actuating fluid
3 passage.

1 23. The pressure regulator of claim 22, the orifice being between .010 inches in diameter and
2 .060 inches in diameter.

1 24. The pressure regulator of claim 22, the orifice being substantially .030 inches in diameter.

1 25. The pressure regulator of claim 14, a bypass fluid passage bypassing fluid to the first
2 spool valve working surface when there is no fluid present to the working surface.

1 26. The pressure regulator of claim 25, the bypass fluid passage having a check valve
2 disposed therein for closing the bypass passage when there is fluid present to the working
3 surface.

1 27. A method of regulating a fluctuatable fluid pressure of a fluid flow, the fluid flow being
2 received from a first device and being transmitted to a second device, comprising:

3 Translating a spool valve between a closed non-regulating disposition and an
4 open regulating disposition, acting on a first spool working surface with a throttled
5 portion of a fluid flow and acting on a second opposed spool working surface with a main
6 portion of the fluid flow.

1 28. The method of claim 27, including tapping the throttled portion of the fluid flow off of a
2 main portion of fluid flow and transmitting the main portion of fluid flow to the second device.

1 29. The method of claim 27, including flowing the main portion of fluid through the spool
2 valve in a direction opposite to a direction of opening translation of the spool valve.

1 30. The method of claim 27, including flowing the main portion of fluid flow through a
2 conical flow passage.

1 31. The method of claim 27, including flowing the main portion of fluid flow through a
2 conical flow passage from a greater flow passage area to a lesser flow passage area.

1 32. The method of claim 27, including forming the second spool working surface with a
2 conical shape.

1 33. The method of claim 27, including forming a conical groove in the spool valve to define
2 the second spool working surface.

1 34. The method of claim 27, including forming a main flow inlet disposed proximate a
2 greater flow passage area of a conical flow passage and forming a main flow outlet disposed
3 proximate a lesser flow passage area of the conical flow passage.

1 35. The method of claim 27, including connecting a main flow inlet to the first spool valve
2 working surface with an actuating fluid passage and defining an orifice in the actuating fluid
3 passage.

1 36. The method of claim 35, including defining the orifice being between .010 inches in
2 diameter and .060 inches in diameter.

1 37. The method of claim 35, including defining the orifice substantially .030 inches in
2 diameter.

1 38. The method of claim 27, including bypassing fluid to the first spool valve working
2 surface by a bypass fluid passage when there is no fluid present to the working surface.

1 39. The method of claim 28, including checking the bypass fluid passage for closing the
2 bypass passage when there is fluid present to the working surface.